

LIII.—*Descriptions of some new Species of Scorpions of the Genus Tityus, with Notes upon some Forms allied to T. americanus (Linn.).* By R. I. POCKOCK.

THE identification of the specimens of *Tityus* obtained on the Lower Amazons by Messrs. Austen and Pickard Cambridge (see Ann. & Mag. Nat. Hist. April 1897, pp. 357–368) entailed on my part a re-examination of the literature of the subject and of the specimens contained in the collection of the British Museum, many fresh examples having been acquired since 1889 and 1893, when I ventured to discuss the affinities of the form then spoken of comprehensively as *americanus*. The result of this return to the subject has been the discovery of a considerable number of new forms; and since the name *americanus*, so far as can be judged, is equally applicable to many of them, and since we have no knowledge of the exact locality of the type, I have decided to discard this term until the type specimen has been re-examined and its structural characters accurately determined. This decision involves the restoration to use of the later names *obscurus* and *forcipula*, assigned by Gervais to two species congeneric with *americanus*, and previously regarded as synonymous with it.

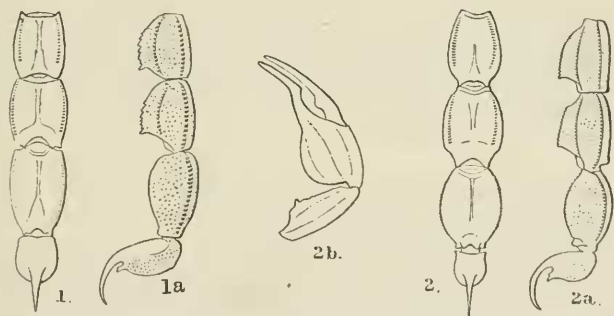
Tityus forcipula (Gervais). (Figs. 1, 1 a.)

Scorpio forcipula, Gervais, Arch. Mus. iv. p. 221 (1844); Ins. Apt. iii. p. 55 (1844).

This species was based upon specimens, of unknown locality, in the Paris Museum and upon one obtained by M. Goudot in Colombia. The latter, now in the collection of the British Museum, may be regarded as the type, as Gervais evidently intended (see Ins. Apt. iii. p. 55) should be the case. When discussing this species in the Ann. & Mag. Nat. Hist. for July 1889, I fell into the error of regarding *forcipula* as the male of *obscurus*, relying upon the accuracy of Gervais's identification as *obscurus* of a specimen in the British Museum, which is obviously the female of the type of *forcipula*. As a matter of fact, *obscurus* was based upon specimens from Cayenne (see Arch. Mus. iv. p. 219), and not upon specimens from Colombia, though Gervais himself referred Goudot's Colombian specimen, now in this collection, to that species. This specimen has but fifteen pectinal teeth, whereas the genuine *obscurus* is accredited with twenty-two; so that there can be very little doubt as to the distinctness of *obscurus* and *forcipula*. Some of the distinctive characters of the latter have

been set forth in the subjoined table of species ; but we are at present in the dark as to the true nature of *obscurus*. The Museum, indeed, has two examples ticketed "Cayenne" which from their distribution might be referable to *obscurus*, but, unfortunately, these two examples represent probably two distinct subspecies or species ; so that it is obviously unsafe to speak of either of them by the name *obscurus*. The specimens under discussion, it may be added, agree most nearly with the species described in my previous paper as *Cambridgei* ; but, without knowing the male of the Cayenne forms, it is not possible to be sure of their identity with the Pará species.

Berthold ('Göttingische gelehrte Anz. Nachrichten ' &c. 1846, p. 56 &c.) was no doubt correct in regarding his species *Gervaisii* as distinct from *obscurus*. It is likely enough, however, to prove identical with *forcipula*, though without an examination of the types or topotypes from Popahan, in Colombia, there can be no certainty on this head.



Figs. 1, 1 a.—Last three segments and vesicle of tail of *T. forcipula* ♂.

Figs. 2, 2 a.—Ditto of *T. pachyurus* ♂.

Fig. 2 b.—Hand and brachium of *T. pachyurus* ♂.

Tityus pachyurus, sp. n. (Figs. 2–2 b.)

Allied to *T. forcipula*, Gervais, in general form, but differing in the following particulars :—

♀. As in *forcipula* the tail is incrassate, the fourth and fifth segments being wider than the first, the width of the fourth and fifth being more than half their length ; but the vesicle is much narrower, being a little narrower than the width of the brachium, but distinctly narrower than that of the hand, whereas in *forcipula* the vesicle exceeds in width the width of the brachium and hand ; the vesicular spine, too,

is considerably further from the longer aculeus than it is in *forcipula*; the whole tail, too, is much smoother and armed with less coarsely denticulate superior crests. The hand is wider than in *forcipula*, being distinctly wider than the brachium, with keels much weaker and smoother; hand-back half as long as movable digit. *Pectines* fractured (number of teeth probably the same as in male).

♂. Differs from that of *forcipula* in much the same characters as the female, the keels and granules being much weaker and the vesicle only as wide as the brachium (much wider in *forcipula*), the aculeus being longer, with the tooth further from its base. The hand, on the contrary, is narrower, its width being equal to the length of that portion of the immovable digit that is distal to the tooth, whereas in *forcipula* it is much greater. Pectinal teeth 19 (in *forcipula* 16).

Measurements in millimetres.—♀. Total length 61, of carapace 7.3, of tail 41, width of its first segment 4.5, of fourth 5, of vesicle 3, of brachium 3.2, of hand 3.6.

♂. Total length 67; length of carapace 7.3, of tail 44, length of first and fourth segments 8; width of first segment 4.5, of fourth 6, of vesicle 3, of brachium 3.2, of hand 5.

Loc. Colombia. Two examples, male (type) and female, obtained from Turner.

Tityus macrochirus, sp. n. (Figs. 3-3b.)

Allied to *pachyurus* and *forcipula*.

♀. *Colour* of trunk and tail brownish or greenish black; legs and chelæ, especially the latter, reddish yellow; fingers black. The transverse crests on the terga not so strong; the upper crests of the tail stronger than on the fourth segment, ending in a long denticle, as on the second and third; fourth segment a little wider than the first; vesicle smooth, punctured, without granules, a little wider than the brachium, but distinctly narrower than the hand, which is weakly keeled; digits shorter than in *pachyurus*, the length of the hand-back equalling almost two thirds that of the movable digit. Pectinal teeth 14-16.

♂. Tail as in the female, but longer and thicker, with its fourth segment a little wider than the first, its width much more than half its length; vesicle distinctly wider than brachium.

Chela longer and thinner than in *pachyurus*; brachium nearly four times as long as broad; hand much thicker than brachium, long, its width equal to half the length of the

hand-back, which exceeds the length of that part of the movable digit distal to the basal lobe; the digits relatively weakly sinuate and lobate.

Pectinal teeth 15-17.

Measurements in millimetres.—♀. Total length 64; length of carapace 7, of tail 39, width of its first segment 4, of fourth 4.1, of vesicle 3, of brachium 2.5, of hand 3.5; length of hand-back 5, of hand 8.1.

♂. Total length 68; length of carapace 7, of tail 44; width of its first segment 4, fourth segment 5, vesicle 3.4; length of brachium 11, of hand-back 8, of movable digit 10; width of brachium 3, of hand 4.1.

Loc. Bogotá (Colombia). Several specimens procured from Mr. I. da Costa.

Differs from the rest of the allies of *americanus* in its smooth vesicle, as well as in other characters appertaining to sex &c.

Tityus dasyurus, sp. n.

Closely allied to *T. metuendus*, Poc.

Tail robust, the fourth segment a little wider than the first, its width more than half its length, the fifth just twice as long as broad; vesicle as wide as the brachium, almost as wide as the hand; the intercarinal spaces of the tail thickly and coarsely granular (with the exception of the superior, which are only finely so).

Hand of chela scarcely wider than brachium, with strong and subgranular keels, the external finger-keel complete, the movable digit more than twice the length of the hand-back. Pectinal teeth 20.

Measurements in millimetres.—Total length 78; length of carapace 8, of tail 47, width of its first segment 4.7, of fourth 5, length of fourth 9; width of vesicle and of brachium 3.2, of hand 3.3; length of hand-back 5, of movable digit 11.2.

A single female example from Porto Rico (*Keyserling coll.*).

Tityus discrepans (Karsch).

Androcottus discrepans, Karsch, Mitth. Münch. ent. Ver. 1879, p. 11.

Of this species the British Museum has three specimens—one adult female ticketed "Brazil" (*Keyserling coll.*), a second adult female from Venezuela (*Keyserling coll.*), and one young individual from Caraccas (*Dr. Ernst*). Seeing that Karsch's type was also from Caraccas, there is no reason for doubting the identification of these specimens.

Although the male is unknown to me, the species is an

exceedingly well-marked one, the characters of which may be seen from the subjoined table.

Tityus androcottoides (Karsch).

Isometrus androcottoides, Karsch, Mitth. Münch. ent. Ver. 1879, p. 114.

Karsch gives no locality for this species, which he regarded merely as a variety of *americanus*. The British Museum, however, has half a dozen examples obtained in Demerara (British Guiana) by Messrs. Selater, Turner, and Bower.

Specimens from Trinidad which were formerly referred by me to this species may be recognized from the Demerara forms by the characters mentioned in the synopsis given below, the characters being constant in the sixteen examples that I have seen.

Tityus trinitatis, sp. n.

Isometrus androcottoides (Karsch), Pocock, Ann. & Mag. Nat. Hist. 1889, iv. p. 57.

Tityus androcottoides, Pocock, Journ. Linn. Soc., Zool. xxiv. p. 377 (1894) (in part).

Differing from the closely related Guiana form, which agrees with Karsch's description of *androcottoides*, in having the two inferior keels on the second caudal segment distinct, those on the third united on the posterior third of the segment, and those on the fourth in the posterior two thirds of the segment. In Demerara specimens which I refer to *androcottoides* the lower keels are united on the posterior third of the second and on the posterior two thirds of the third.

Pectinal teeth 16-17.

Loc. Trinidad (*J. E. Broadway and J. H. Hart*).

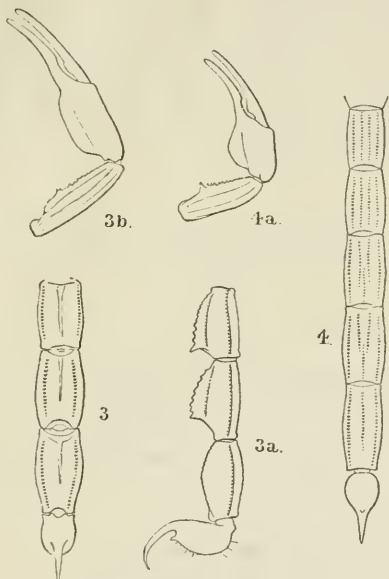
The characters of all the Trinidad specimens that I have seen are very constant in young and adults of both sexes.

Tityus magnimanus, sp. n. (Figs. 4, 4 a.)

♂. *Colour* a reddish brown, the fourth and fifth caudal segments, the vesicle, and digits blackish.

Tail barely six times the length of the carapace, which equals the length of its third segment, nearly parallel-sided, the third and fourth segments being only slightly wider than the first; the inferior keels complete on the second segment, but represented by a single median one on the posterior third of the third and on the posterior two thirds of the fourth; the intercarinal spaces almost smooth, scarcely perceptibly granular; the posterior granule of the upper crests of segments 2 to

4 enlarged. Vesicle a little wider than brachium, but narrower than hand. *Chelæ* not elongate, width of brachium almost half its length, its length just exceeding that of the carapace ;



Figs. 3, 3 a.—Last three segments of tail of *T. macrochirus* ♂.

Fig. 3 b.—Hand and brachium of *T. macrochirus* ♂.

Fig. 4.—Lower side of tail of *T. magnimanus* ♂.

Fig. 4 a.—Brachium and hand of *T. magnimanus* ♂.

hand large, its width nearly equal to the length of the hand-back and not much less than the length of the first caudal segment ; hand-back about half the length of the movable digit ; the digits separated basally, sinuate and lobate.

Coxæ and abdominal sterna only very feebly granular.

Pectinal teeth 19 (male and female).

♀. Young, 45 millim. in length, resembles the male in other than sexual characters. Tail a little narrowed posteriorly ; vesicle a little narrower than the hand and brachium, which are subequal ; movable digit a little more than twice the length of the hand-back.

Measurements in millimetres.—♂. Total length 68 ; length of carapace 7·3, of tail 43, width of its first segment 3·5, of fourth 3·8, of vesicle 3, of brachium 3, of hand 4·5 ; length of brachium 8, of hand-back 4·8, of movable digit 9·5.

Loc. Brazil. Two specimens, presented by E. E. Austen.

Though belonging to the *T. androcottoides* section, as shown by the fusion of the inferior caudal keels, this species differs from both *androcottoides* and *trinitatis* in having the tail, sterna, and coxæ much smoother. The sexual characters also are strikingly different, the carapace in the male of the last-mentioned being much shorter than the third caudal segment and less than one seventh the length of the whole tail. The chelæ, moreover, are slender, the width of the brachium being less than one third of its length, the hand narrow, digits contiguous, &c.

Synoptical Table of the previously discussed Species of the americanus Group of Tityus.

Males.

- a. Two inferior caudal keels on segments 2 to 4 distinct.
 - α^1 . Vesicle without granules below, punctured; hand-back excelling carapace in length; (tail moderately robust, with strongly denticulate upper edges; chelæ long; brachium narrower than vesicle, much narrower than hand; 15-17 pectinal teeth) *macrochirus*, sp. n.
 - b^1 . Vesicle granular below; hand-back less than length of carapace.
 - α^2 . Vesicle much wider than width of brachium, its width nearly equal to the length of the first caudal segment and equal to the space between the anterior edge of the ocular tubercle and the posterior border of the carapace; the tooth close to the base of the aculeus; 15 pectinal teeth *forcipula*, Gerv.
 - b^2 . Vesicle narrower, its width much less than the length of the first caudal segment and less than half the length of the carapace; tooth further from the base of the aculeus.
 - α^3 . Tail strongly incrassate posteriorly, width of the fourth segment exceeding half its length; hand large, much wider than brachium, its width exceeding half the length of the hand-back, digits strongly sinuate and lobate.
 - α^4 . Tail very stout posteriorly, the width of the fifth segment equal to the length of the second and just equal to the median length of the carapace; hand also much wider, with digits more strongly sinuate. *pachyurus*, sp. n.
 - b^4 . Tail less stout; the width of the fifth segment considerably less than

the length of the second; hand narrower, its width at most equal to the length from the eye to the posterior margin of the carapace; digits less strongly sinuate *metuendus*, Poc.

b³. Tail slender, feebly incrassate, width of fourth segment less than half its length; width of hand equal to width of brachium, less than that of vesicle, and about one third the length of the hand-back; digits contiguous . . *Cambridgei*, Poc.

b. Inferior keels on the third and fourth (sometimes also on the second) caudal segments united to form a single median keel.

a⁵. Tail short, about six times the length of the carapace, which is about equal to the length of the third caudal segment; brachium less than three times as long as wide, the width of the hand about half the length of the movable digit; sterna and intercarinal spaces of tail much smoother; a median keel on the posterior third of the third caudal segment and on the posterior half of the fourth *magnimanus*, sp. n.

b⁵. Tail long, more than seven times the length of the carapace, which is much shorter than its third segment; hand and brachium narrower, the former more than three times as long as broad, the latter about one third the length of the movable digit in width; sterna and intercarinal spaces more coarsely granular.

a⁶. Inferior crests on the second caudal segment not united posteriorly, those of the third united in the posterior half of the segment and those of the fourth in the posterior three fourths of the segment . . *trinitatis*, sp. n.

b⁶. Inferior crests on the second caudal segment united in the posterior third of its length, of the third in the posterior two thirds, and of the fourth in the posterior five sixths *androcottoides*, Karsch.

Females.

a. Caudal segments 1 to 4 with a pair of parallel granular keels.

a¹. Vesicle punctured and smooth below; (hand obsoletely keeled, wider than vesicle; a strong terminal denticle on the upper crest of caudal segments 2 to 4; pectinal teeth 15-17) *macrochirus*, sp. n.

b¹. Vesicle serially granular below.

a². Vesicle large, its width very noticeably greater than that of the brachium and hand; spine close to base of aculeus (tail incrassate, very coarsely granular,

- upper keels of segments 2 to 4 strongly denticulate; hand strongly crested, as wide as brachium; pectinal teeth 15)... *forcipula*, Gerv.
- b*². Vesicle narrower, its width not greater than that of the hand and about equal to that of the brachium; spine further removed from base of aculeus.
- a*³. Tail thicker, width of the fourth segment more than half its length, its superior intercarinal space greater than the width of the brachium.
- a*⁴. Hand weakly keeled, broader, distinctly broader than the brachium; tail comparatively smooth, the granulation evanescent; stouter, the first segment nearly as broad as long.
- a*⁵. Tail thicker; width of fifth segment about two thirds of its length *pachyurus*, sp. n.
- b*⁵. Tail narrower; width of fifth segment only about half its length. *metuendus*, sp. n.
- b*⁴. Hand more strongly keeled, but narrower, only very slightly wider than the brachium; tail very coarsely and distinctly granular at the sides and below; first segment considerably longer than broad. *dasyurus*, sp. n.
- b*³. Tail thinner; fourth segment about twice as long as broad, its superior intercarinal space (inside measurements) narrower than brachium; caudal segments less coarsely granular than in *b*⁴ *Cambridgei*, sp. n.
- b*. The inferior keels of segments 3 and 4 or 2, 3, and 4 united posteriorly or throughout their length.
- a*⁶. A single median keel on segments 2-4; abdominal sterna and intercarinal areas of tail smooth; upper caudal crests strongly denticulate *discrepans*, Karsch.
- b*⁶. A single median keel at most on the posterior half of the second caudal segment as well as on the third and fourth; abdominal sterna and intercarinal spaces of tail thickly granular.
- a*⁷. A median keel on the posterior third of the second caudal segment and posterior two thirds of the third and almost the whole of the fourth *androcottoides*, Karsch.
- b*⁷. The two paired keels on the lower side of second caudal segment not united, but united on the posterior half of the third and the posterior two thirds of the fourth *trinitatis*, sp. n.

To judge from the single immature female specimen of

T. magnimanus that I have seen, this species will fall under section *b'* of the above table, though differing from *trinitatis* in being less coarsely granular on the sterna and tail.

Tityus atriventer, sp. n.

Colour deep reddish yellow, thickly variegated with black on the trunk, limbs, and tail; abdominal sterna, as well as the coxæ and maxillary lobes of the cephalothorax, also marked with black patches; patches on the hands arranged in black lines.

Trunk granular throughout above; abdominal sterna also granular.

Tail nearly six times the length of the carapace, parallel-sided in female, posteriorly incrassate in male, the fifth segment being wider than the first; the median lateral keel weak on the second segment; the keels weak, weakly granular, the terminal granule on the upper keel of the second and third segments larger than the rest, the intercarinal spaces of the tail obsoletely granular; vesicle weakly granular, the spine beneath the aculeus slender and pointed, not blade-like as in some allied species.

Chelæ weakly granular, the crests moderately strong; hands in female a little wider than brachium, in male much wider, the hand-keels strong, obsoletely granular; digits with 13-14 rows of teeth, rather strongly lobate and sinuate in the male.

Pectinal teeth 14-15 in female, 15-16 in male.

Measurements in millimetres.—♀. Total length 38; length of carapace 4.5, of tail 24, width of its first segment and of fifth 2.3; width of brachium 2, of hand 2.2; length of movable digit 5.

♂. Total length 32; length of carapace 3.5, of tail 21, width of its first segment 1.8, of its fifth 2.2; width of brachium 1.5, of hand 2.3; length of movable digit 4.

Loc. Balthazar in Grenada (Antilles). Two specimens captured by Mr. H. H. Smith at an altitude of 250-300 feet under rotting leaves and the bark of a rotten log.

These specimens were received too late for notice in my paper upon the West-Indian Scorpions published in Journ. Linn. Soc., Zool. xxiv. pp. 374-409 (1894). It may be added, however, that the female differs from the female of all the species there recorded in having no lobate expansion at the base of the pectines; but, tested by the characters used in the table on p. 377, this new species falls alongside of *T. melanostictus* under section *a*². But from the latter it may be at

once recognized by having the abdominal sterna thickly granular and densely variegated, not to mention the infuscation of the coxæ and the presence of two crests on the fourth sternite. These two characters, in fact, coupled with the absence of the pectinal lobe, indicate a close relationship between *T. atriventer* and a group of species common in South America, of which *T. columbianus*, Thor., is a well-known example.

Some of the differential characters of this group of species are set forth in the accompanying table :—

- | | | |
|------------------|---|---|
| a. | Upper keels of second, third, and fourth caudal segments posteriorly elevated and ending in a strong triangular tooth. | |
| a ¹ . | Vesicular tooth small, spiniform; tail coarsely granular..... | <i>columbianus</i> , Thor. (New Granada.) |
| b ¹ . | Vesicular tooth deep and blade-like; tail much more finely granular..... | <i>Quelchii</i> , Poc. (Demerara.) |
| b. | Upper keels of segments 2-4 not or hardly elevated posteriorly, at most ending in an enlarged granule. | |
| a ² . | Vesicular tooth small and spiniform; tail obsoletely granular | <i>atriventer</i> , sp. n. Grenada (W. Indies.) |
| b ² . | Vesicular tooth deep and blade-like; tail and its keels more distinctly granular. | |
| a ³ . | Vesicle and fifth caudal segment pale, not deeper in colour than the rest of the tail; hand in male only as wide as the brachium, digits not sinuate; fifth caudal segment not elevated | <i>pusillus</i> , Poc. (Igou-rassu.) |
| b ³ . | At least the vesicle much darker than the rest of the tail; hands expanded, fingers sinuate, and fifth caudal segment elevated in male. | |
| a ⁴ . | Vesicular tooth very deep, obliquely truncate at the tip; coxa of cephalothorax strongly infuscate | <i>silvestris</i> , Poc. (Santarem.) |
| b ⁴ . | Vesicular tooth less deep, more pointed apically; coxæ of cephalothorax scarcely at all infuscate | <i>paraguayensis</i> , Kraep. (Paraguay.) |

Tityus rufofuscus, sp. n.

Colour a uniform brownish black, like that of *T. pachyurus*.

Carapace with anterior border transverse, scarcely perceptibly emarginate; *terga* with the median longitudinal and

the transverse crests strong; the median crest distinct on the last; *sterna* finely granular, the last with the four crests distinct and granular, and two crests on the fourth sternite.

Tail relatively weak and slender, posteriorly narrowed, the first segment distinctly wider than the fourth, which is about twice as long as wide; all the intercarinal spaces, including the superior, finely granular; all the keels pronounced and granular, but none of the superior keels in any sense denticulate, evenly granular throughout; vesicle granular, distinctly narrower than hand, about equal to the brachium.

Chelæ sculptured as in the other species, except that the anterior surface of the humerus and brachium are evenly granular throughout (except for the presence of one basal denticle on the brachium), instead of being irregularly denticulate; hand with strong finely granular keels; the outer finger-keel also strong and almost complete, merely interrupted for a short space; the finger and hand exceeding in length the first two tail-segments and half the third, the movable digit twice the length of the hand-back, not lobate, nor is the immovable basally sinuate; 18 median rows of teeth on the digit, and the same number composing the outer and inner series.

Pectinal teeth 20; shaft not basally lobate.

Measurements in millimetres.—Total length 61; length of carapace 7, of tail 39, width of its first segment 3·5, of its fourth 3·1, of vesicle 2·8, of brachium 2·8, of hand 3·1; length of brachium 8·5, of hand-back 5, of movable digit 10.

Loc. Brazil (*E. Doubleday*).

Differing from the species allied to *forcipula* &c. in having no expansion of the base of the pecten, in having the upper caudal keels evenly granular, and the anterior surface of the humerus and brachium without irregular denticulations; tail narrower, &c. From *T. stigmurus* (Thorell), which it resembles in many characters, it may be distinguished by its uniform dark colouring.

LIV.—On *Sus verrucosus*, Müll. & Schleg., and Allies, from the Eastern Archipelago. By Dr. C. I. FORSYTH MAJOR.

ONE of the most striking and important characters of *Sus verrucosus* from Java, and its allies from Borneo, Celebes, the Philippines, &c., as well as of *Sus barbatus*, Müll. & Schleg., is to be found in the shape of the lower canines.

Ann. & Mag. N. Hist. Ser. 6. Vol. xix. 37